Texas Agricultural Extension Service
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BODY FAT IN BEEF COWS AFFECTS PREGNANCY RATES

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Pregnancy rates are highly variable in beef herds and are influenced by many factors including nutrition. Low pregnancy rates are caused by improper nutrition in 90 percent or more cases. The amount of fat on a cow is a direct reflection of nutritional status. Recent studies have shown that fat cover, as influenced by level of nutrition, has a strong influence on pregnancy rates.

Body Condition Scores — A Measure of Fat Cover

Several systems exist for assigning body condition scores to cows. The most common system involves the use of a numerical scoring scale based on fat cover over the spine, ribs, hook bones and pin bones (Table 1). The numerical scale ranges from a score of one, representing extremely thin cows, to nine for extremely fat cows. Producers experienced with this system rely mainly on visual observation, but will often manually feel for the amount of fat cover over these four anatomical locations. This is advisable since hair cover can be deceptive.

Since five is in the middle of the one to nine range, cows scoring five have average fat cover. Cows scoring four have some fat cover, but their ribs, spine, hook and pin bones are easily seen and felt. Cows scoring five, have enough additional fat cover that these structures are not easily seen or felt.

Body Condition and Its Effect on Pregnancy

Numerous studies have addressed the effect of body condition on pregnancy rates. In these studies fatter cows, those scoring five or more, have higher pregnancy rates than those scoring less than five. Additionally, at any given time during a breeding season, more of the cows with average fat cover will be pregnant than those with less than average fat cover. This means cows scoring five or more will conceive earlier in the breeding season than cows scoring less than five. This is important to profits because early conceivers will be early calvers. It is well known that the earliest born calves are most often the heaviest at weaning simply because of their age advantage over their younger herdmates.

Texas studies have concentrated mainly on pregnancy rates affected by body condition at the start of calving and during the subsequent breeding season. The results of two Texas trials, shown in Table 2, demonstrate the effect of body condition at the start of calving on subsequent rebreeding rates. Some feel

Table 1. Body Condition Scoring System.

Score	Description
1	**Poor** - starving - bordering on inhumane - survival questioned during stress. No palpable fat cover along backbone or ribs.
2	**Very Thin** — poor milk production - chances for rebreeding slim to none. Some fat present along backbone but no fat cover over ribs.
3	**Thin** - lowered milk production - poor reproduction. Fat along backbone and slight amount of fat cover over ribs.
4	**Borderline** - reproduction bordering on inadequate. Some fat cover over ribs.
5	**Moderate** - minimum necessary for efficient rebreeding - good milk production - generally good overall appearance. Fat cover over ribs feels spongy.
6	**Moderate to Good** - milk production and rebreeding very acceptable. Spongy fat cover over ribs abd fat beginning to be palpable about tailhead.
7	**Good** - fleshy - maximum condition needed for efficient reproduction. Spongy fat cover over ribs and fat around tailhead.
8	**Fat** - very fleshy - unnecessary - no advantage in rebreeding from having cows in this condition. Cow has large fat deposits over ribs, around tailhead, and below vulva.
9	**Extremely fat** - extremely wasty and patchy - may cause calving problems. Cow extremely overconditioned.

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that long breeding seasons will ensure high pregnancy rates, but evidence in Trial 1 contradicts this belief. In Trial 1, only 12 percent of the cows scoring four or less had conceived even after a 180-day breeding period. This indicates that high pregnancy rates will not occur in thin cows unless they are able to gain some fat during the breeding period which is difficult for cows with calves at side, especially first-calf cows. Consequently, producers should put flesh on the cow before she calves while her nutrient requirements are still low compared to after she calves.

Table 2. Effect of Body Condition at the Start of Calving on Subsequent Pregnancy Rates.

	Condition Score at Calving		
	4 or less	5	6 or more
Trial 1:			
Number of cows	32	60	32
Percent pregnant after:			
120 days	0	8	47
180 days	12	50	90
Trial 2:			
Number of cows	25	59	103
Percent pregnant after:			
20 days	4	15	43
40 days	8	24	51
60 days	24	51	73

Trial 2 shows similar results, but conception occurred earlier in these cows than when it occurred for the cows in Trial 1. This is attributed to the fact that cows in Trial 2 received supplemental feed whereas those in Trial 1 did not. This indicates that the nutrition level during breeding has a strong influence on the cow's ability to rebreed, regardless of her body condition at calving time. Thin cows in both trials were slow to conceive and most of them failed to conceive at all, regardless of whether they were being fed or not.

Other data shows the effect of body condition during the breeding season on pregnancy rates. Data summarized in Table 3 includes over 1,000 cows from five different herds. In these herds, condition scores were taken at weaning time, after the cows had already been exposed to the bull. One must assume from this that their condition scores were achieved at some point either before or during the breeding season. The data in Table 3 clearly show that cows scoring 4 or less at weaning had serious problems during the breeding season. Very few conceived and of those that did, conception occurred much later than for cows scoring five or more.

Table 3. Effect of Body Condition During the Breeding Season on Pregnancy Rates.

	Condition Scores at Weaning		
	4 or less	5	6 or more
Number of cows	122	300	619
Percent pregnant after:			
20 days	4	10	20
40 days	12	24	46
60 days	23	46	69
80 days	36	65	84
100 days	42	72	90
120 days	58	79	93
140 days	58	84	94
160 days	58	85	95
Percent not pregnant	42	15	5

Summary

Acceptable pregnancy rates depend on the degree of fat cover both at calving time and during the breeding season. Producers who feed their cattle according to body condition and attempt to correct nutritional deficiencies as reflected in low condition scores, achieve good reproductive performance. Remember to correct deficiencies prior to calving when nutrient requirements are still relatively low compared to after calving. The target condition score should be that of five or more because anything less is undesirable.

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